

WHAT IS CLAIMED IS:

1. An electro-optical device comprising:  
 a pair of substrates including a first substrate and a second substrate  
 adhered together with a sealing material;  
 5 an electro-optical material enclosed between said pair of substrates;  
 and

a plurality of pixels formed in a matrix disposed within said pair of  
 substrates, said first substrate including:

- 1) a lens array substrate provided with a plurality of convex  
 10 microlenses with one microlens corresponding to each of said plurality of pixels,
- 2) a step portion being substantially equal in height to said  
 microlenses in a region overlapping said sealing material, and
- 3) a transparent cover adhered to the lens array substrate with  
 an adhesive that covers said microlenses and said step portion.

15 2. The electro-optical device according to claim 1, said step portion  
 having a surface and the surface being planar.

3. A projection display device comprising:  
 a light source that emits light;  
 the electro-optical device according to claim 1 that modulates the light;  
 20 and  
 a projection device that projects the light emitted from said light source  
 and modulated by said electro-optical device.

4. A method for fabricating an electro-optical device which comprises a  
 pair of substrates including a first substrate and a second substrate, a liquid crystal  
 enclosed between the pair of substrates, and a plurality of pixels formed in a matrix  
 disposed within said pair of substrates, said first substrate including a lens array  
 substrate, said method comprising:

- forming a plurality of convex microlenses with one microlens  
 corresponding to each of said plurality of pixels on said lens array substrate;
- 30 forming a step portion substantially equal in height to said microlenses  
 on a periphery of said first substrate;
- adhering a transparent cover to said lens array substrate with an  
 adhesive to cover said microlenses and said step portion;

forming a sealing material;  
 superposing the first substrate on the second substrate to face said step  
 portion with the sealing material therebetween; and  
 curing said sealing material while pressing said first substrate on the  
 5 second substrate.

5. The method for fabricating an electro-optical device according to  
 claim 4, said sealing material comprising a photo-curing resin.

6. A projection display device comprising:  
 a light source that emits light;  
 10 an electro-optical device fabricated using the method according to  
 claim 4 that modulates the light; and  
 a projection device that projects the light emitted from said light source  
 and modulated by said electro-optical device.

7. A method for fabricating an electro-optical device which comprises a  
 pair of substrates including a first substrate and a second substrate, an electro-optical  
 material enclosed between the pair of substrates, and a plurality of pixels formed in a  
 matrix disposed within said pair of substrates, said first substrate including a lens  
 array substrate, said method comprising:

forming a plurality of convex microlenses with one microlens  
 20 corresponding to each of said plurality of pixels on said lens array substrate;  
 forming a step portion substantially equal in height to said microlenses  
 on a periphery of said lens array substrate;

bonding a transparent cover to said lens array substrate with an  
 adhesive so as to cover said microlenses and said step portion;

25 forming a sealing material;  
 superposing the first substrate on the second substrate to face said step  
 portion with said sealing material therebetween; and  
 curing said sealing material while applying pressure from an exterior of  
 said pair of substrates.

30 8. The method for fabricating an electro-optical device according to claim  
 7, said sealing material comprising a photo-curing resin.

9. A projection display device comprising:  
 a light source that emits light;

an electro-optical device fabricated using the method according to claim 7 that modulates the light; and  
 a projection device that projects the light emitted from said light source and modulated by said electro-optical device.

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10. An electro-optical device comprising:

a pair of substrates including a first substrate and a second substrate adhered together with a sealing material; and

an electro-optical material enclosed between said pair of substrates, said second substrate having a plurality of scanning lines, a plurality of data lines intersecting said plurality of scanning lines, a pixel having a switching device connected to each of said scanning lines and each of said data lines, and a pixel electrode connected to said switching device, and the first substrate including:

- 1) a lens array substrate provided with a plurality of convex microlenses with one microlens formed corresponding to each of said pixel,
- 2) a step portion being substantially equal height to said microlenses in the region overlapping said sealing material, and
- 3) a transparent cover adhered to the lens array substrate with an adhesive that covers said microlenses and said step portion.

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11. A projection display device comprising:

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a light source that emits light;  
 the electro-optical device according to claim 10 that modulates the light; and  
 a projection device that projects the light emitted from said light source and modulated by said electro-optical device.

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